Appendix G
Mitigation Included in the Alternatives

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Table G-1 summarizes the anticipated impacts and recommended mitigation for construction of the alternatives. As indicated in the table, implementing the recommended mitigation would result in the anticipated impacts being less than significant. Impacts and mitigation associated with each of the resource areas, such as biological resources, are further discussed in Chapter IV, Affected Environment and Environmental Consequences.

Table G-1
Summary of Impacts and Mitigation Measures

Impact	Mitigation	Level of Significance After Mitigation
Water Resources		
Alternatives MEN-5, MEN-7, MEN-9B, or MEN-12 could cause a variety of water quality impacts to surrounding surface waters during construction.	To avoid or minimize water quality impacts related to increased erosion and sedimentation as a result of construction activities, the contractor would be required to develop a stormwater pollution prevention plan (SWPPP) and erosion control plan (ECP) in coordination with the Central Valley Regional Water Quality Control Board (CV Water Board) through the Section 401 permitting process to obtain stormwater management approval for the project. At a minimum, the plans would contain the following Best Management Practices: • Complete revegetation and stabilization of disturbed soils. Reseeding and mulching work would be completed by October 1 of the year following completion of the project. If erosion control practices are not installed by October 1 of the year following completion, exposed soils could require additional treatment following seasonal rains and subsequent erosion. The seed material would include native plant species and be approved by a revegetation specialist or erosion control specialist. Special emphasis would be given to native plant assemblages that were characteristic to the site prior to construction. • Construction of interception ditches to direct water away from the tops of cut-and-fill slopes. • Construction of small sediment catch basins or traps to prevent sediment from being transported away from development sites. The location and size of these basins would be designed to minimize impacts to riparian and wetland areas. Types of sediment traps to be considered include filter berms, straw-bale barriers, filter inlets, vegetative filter strips, and culvert risers.	LS
During construction of Alternatives MEN-5, MEN-7, MEN-9B, or MEN-12, hazardous materials might be accidentally released and cause subsequent impacts to surface-water and groundwater resources.	Mitigation for this impact would be the same as those listed above.	LS
Land Use		
Alternatives MEN-5, MEN-7, MEN-9B, or MEN-12 could cause the temporary loss of production to neighboring agricultural operations and inconvenience to farming operations due to construction activities.	The following mitigation measures would reduce impacts to land use resulting from construction activities to a less than significant level: • Schedule construction to minimize impacts to crop production and operations. • Minimize workspace to lessen impacts to available croplands and decrease potential for the spread of noxious weed. • Compensate landowners for loss of crop production or impacts to agricultural operations. • Compensate landowners for loss of property.	LS
Biological Resources		
Alternatives MEN-5 and MEN-7 could cause impacts to	The following mitigation measures would ensure that impacts to vegetation would be reduced to less than significant levels:	LS

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Summary of Impacts and Mitigation Measures

Impact	Mitigation	Level of Significance After Mitigation
2.2 acres of riparian vegetation during the construction period. Alternatives MEN-9B and MEN-12 could cause impacts to wetland vegetation during the construction period.	• Conduct preconstruction surveys prior to final design to identify locations of special-status plants, following the procedures outlined in *Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities* (CDFG, 2000). Surveys must be timed to coincide with the flowering seasons of the targeted species. After pre-construction surveys, develop measures to avoid impacts to special-status plants. Where avoidance of special-status plants is not practicable, develop and implement measures for mitigating impacts, including relocation or re-establishment of special-status plant populations. Mitigation would involve creating suitable habitat in unsuitable habitat by providing soil, water, and vegetation to replicate conditions needed to establish special-status species populations. • Prior to construction, visit construction areas to verify and refine the acreage of habitats to be affected and characterize the composition and quality of the affected habitat. Mitigate the loss of riparian and wetland habitat by enhancing, restoring, or creating riparian and wetland habitat at a 3:1 ratio for every acre of habitat permanently affected. Mitigation may be accomplished through the following means: – Restoration, enhancement, or creation of habitat onsite – Restoration, enhancement, or creation of habitat at an offsite location – Purchase of mitigation credits in an approved mitigation bank Mitigation lands would be protected in perpetuity through conservation easements, fee-title acquisition, or other appropriate mechanisms. Although a candidate riparian mitigation site was proposed as part of a Habitat Evaluation Procedures (HEP) analysis (USFWS, 1993), the project description has changed since the HEP analysis was completed, so the specific mitigation approach for this alternative would be developed during project-level review and implementation. • Develop and implement a revegetation plan for construction areas. The revegetation plan should incorporate seeding and planting of native species that will resist invasion by noxious weeds. • Develop and implement a monitoring plan to assess the success of mitigation measures for impacts to vegetation and special-status species (Reclamation and CDFG, 2003). Plantings on the revegetation and compensation sites should be monitored during the growing season (March through September) to determine growth rates for 3 years from the date of transplant or planting. A yearly report should be submitted to USFWS, including dates of watering, growth rates, cover rates, and mortality figures. Monitoring could be curtailed after 3 years if success is demonstrated. (Plant cover of the mitigation site will be at least 80 percent of the cover at the impact site prior to project disturbance and	

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Impact	Mitigation	Level of Significance After Mitigation
	vegetative composition of the dominant [more than 20 percent of the cover] and characteristic species [typical, regularly occurring in the habitat, but not dominant] exceed 80 percent of that which was present at the impact site.) Monitoring of special-status plant mitigation sites could be curtailed after 3 years if overall survival rates of seeded, planted, or transplanted plants exceed 80 percent of projected survival rates.	
Alternatives MEN-5, MEN-7, MEN-9B and MEN-12 could cause impacts to wildlife species as a result of construction activities.	The following mitigation measures would ensure that impacts to wildlife and fish species would be reduced to less than significant levels: • Construction personnel shall participate in a USFWS-approved worker environmental awareness program covering the potential presence of federally listed species, their habitats, and the protections afforded them under the ESA. If any evidence of activity is found suggesting the presence of listed species, the USFWS' Sacramento Fish and Wildlife Office will be contacted to initiate an interagency ESA consultation. • For construction activities in or adjacent to potential habitat for giant garter snake, the following measures will be implemented (USFWS, 1997): – Habitat disturbance will be confined to the minimal area necessary. Areas of snake habitat that are to be avoided during construction will be clearly flagged and designated as avoidance areas. – Construction activities in snake habitat will be conducted between May 1 and October 1 to the extent possible. Where construction must occur outside of this period, the following measures will be implemented on upland areas that are potential hibernation habitat for giant garter snakes: • Clear, grub, and grade all areas no later than October 1 to fill in rodent burrows and cracks. • Have a USFWS-approved biologist present during all excavations and ground disturbances. • Potential facility sites will be reviewed prior to design to determine whether potential habitat for listed species, including giant garter snakes, is supported in or adjacent to the proposed construction area. Project facilities and areas required to support construction activities (e.g., staging areas) will be sited to avoid areas of potential habitat where possible. If avoidance is infeasible, the acreage of upland and aquatic habitat that will be temporarily and permanently affected will be determined through a preconstruction survey. At appropriate times during or immediately following completion of construction activities, a USFWS-approved biologist will verify the acreage of aquatic and upland habitat affected by construction to determine mitigation requirements and report these amounts to USFWS. Temporarily disturbed areas will be restored to preproject conditions following completion of construction activities.	LS

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Impact	Mitigation	Level of Significance After Mitigation
	• Preconstruction surveys should be conducted for raptors prior to the peak March-through-August nesting period. Construction during the critical nesting period (March through August) will be avoided, or, if nesting pairs and fledglings are identified within 0.25 mile of construction, a monitoring program will be initiated in consultation with CDFG. If Swainson's hawks are present, site surveys will be conducted to identify nesting activity. If nests are located within 0.5 mile of the project site with a direct line of sight to the activity, CDFG monitoring protocol (CDFG, 1994) will be implemented and the agency will be consulted to establish appropriate mitigation. For other raptors, seasonal restrictions (March through August) on project activities may be appropriate. • Preconstruction surveys should be conducted for San Joaquin kit fox. Before staging and construction, a USFWS-approved biologist should survey for dens and other kit fox sign, such as scat, prey remains, and tracks. The biologist shall follow the *Standard Recommendations for Avoidance of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS, 1999b), as follows: – If dens or other signs are found, confine surface disturbance to areas that do not exhibit the habitat types and sign with an adequate buffer (not less than 200 feet). The biologist must stake and flag to exclude construction activities within 200 feet of potential habitat. – To avoid inadvertent entrapment of animals in holes during construction, excavated, steep-walled holes or trenches more than 2 feet deep should be covered at the close of each working day by plywood or similar material or provided with one or more escape ramps constructed of earth fill or wooden planks. – Construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved. – No work shall be conducted between sunset and sunrise within 0.5 mile of potential habitat. – No domestic animals (pets) shall be allowed on the project site.	LS
	– On unposted roads, vehicle speeds shall not exceed 25 miles per hour. – Trash shall be disposed of in covered containers and removed daily. – Restrict the use of rodenticides and herbicides to prevent secondary poisoning. – In the event that take cannot be avoided, contact the USFWS for information before starting the action. • Before any ground-disturbing activities, have a USFWS-	

Table G-1 Summary of Impacts and Mitigation Measures		
Impact	**Mitigation**	**Level of Significance After Mitigation**
	approved biologist survey for the presence of the plant associations considered habitat for the Fresno kangaroo rat. The USFWS-approved biologist must survey for the presence of Fresno kangaroo rat sign, such as burrow systems, haystacks, and areas of clipped vegetation. As for San Joaquin kit fox mitigation, confine surface disturbance to areas that do not exhibit the habitat types and sign of the Fresno kangaroo rat with an adequate buffer (not less than 200 feet). Similar measures shall also be taken regarding daily work windows, domestic animals, vehicle speeds, and trash disposal. • Before staging and construction, have a USFWS-approved biologist survey for the presence of the habitat types used by and signs of blunt-nosed leopard lizards. If habitat or sign is observed, protocol surveys must be performed (CDFG, 2004). During the blunt-nosed leopard lizard's hibernation time, surveys are unreliable and cannot be used to determine absence of this species. Notice will be given to CDFG and USFWS 30 days before beginning construction to determine whether capture is desired. For projects from 5 to 10 acres (or 5 to 10 linear miles), in suitable habitat, should schedule surface disturbance activities during the active season (approximately April 15 to October 15). A USFWS-approved biologist will survey any trenches in the morning and late afternoon to remove lizards that fall into the trench. As for San Joaquin kit fox and Fresno kangaroo rat mitigation, confine surface disturbance to areas that do not exhibit the habitat types and sign of the blunt-nosed lizard with an adequate buffer (not less than 200 feet). Similar measures shall also be taken regarding daily work windows, domestic animals, vehicle speeds, and trash disposal.	
Alternatives MEN-5, MEN-7, MEN-9B and MEN-12 could cause direct losses, losses in and changes to aquatic habitat, and degradation of water quality in Mendota Pool as a result of construction activities.	Impacts to fish would be reduced to less than significant levels by implementing the following mitigation measures: • Prior to dewatering construction areas, cofferdams or sheet piling will be placed to isolate work areas and reduce direct impacts to fish in the Mendota Pool. • Prior to final dewatering of these coffered areas, any fish present will be collected and transported, under the supervision of a USFWS-approved fishery biologist, to parts of the Mendota Pool that will be outside of the construction impact area. • During dewatering of areas of the Mendota Pool for construction, visual surveys will be conducted to identify areas where fish may become stranded. Fish observed from these areas will be collected and relocated, under the supervision of a USFWS-approved fishery biologist, to areas in Mendota Pool that remain inundated.	LS
Alternatives MEN-5 and MEN-7 could cause impacts to riverine habitat in the San Joaquin River and could result in the permanent loss of 1.9 acres of riparian habitat. Alternatives MEN-9B and MEN-12 could result in the	The following mitigation measures would ensure that impacts to wetlands would be reduced to less than significant levels: • Conduct preconstruction delineations of wetlands and other Waters of the United States. Request a verification of the delineated boundaries from the U.S. Army Corps of Engineers (USACE). Following verification of the delineation boundaries, develop measures to avoid impacts to jurisdictional wetlands.	LS

Table G-1
Summary of Impacts and Mitigation Measures

Impact	Mitigation	Level of Significance After Mitigation
permanent loss of up to 1 acre of seasonal wetland habitat on the Fresno Slough.	• After final design, impacts to wetlands and other waters should be quantified. Submit to the USACE a permit application for discharge of fill material into Waters of the United States, following Section 404 of the CWA. • Install and maintain appropriate erosion and sedimentation controls during and following construction as specified in the required SWPPP and ECP (see Water Resources). • A streambed alteration agreement with CDFG should be obtained, following Section 1601 of the Fish and Game Code, before initiating construction in the 100-year floodplain of any stream crossing. • Develop and implement mitigation plans for impacts to wetlands. Permanently affected wetlands (disturbed longer than 6 months) should be replaced at a 3:1 ratio. Temporarily affected wetlands should be restored onsite. Stockpile topsoil removed from wetlands and store in upland landscape positions. Following construction disturbance, restore the land surface contours and backfill the top 6 to 12 inches with stockpiled topsoil.	
	• Following project completion, monitor the site to assess mitigation success. Success criteria should be clearly defined for measures implemented to mitigate for project impacts to wetlands. Yearly reports should be submitted to USFWS and USACE. If success criteria are being met after 3 years of monitoring, no additional monitoring would be necessary.	
Alternative MEN-5 could cause a significant benefit to up to 2,310 acres of seasonal wetlands.	N/A.	N/A
Alternatives MEN-9B and MEN-12 could result in the disturbance or displacement of special-status species.	The following additional mitigation measures would ensure that impacts specifically associated with Alternatives MEN-9B and MEN-12 would be reduced to less than significant levels: • Conduct protocol burrowing owl surveys along the entire length of the pipeline alignment. • Consult with appropriate agencies to determine whether small mammal trapping is required to assess the presence of other listed species.	LS
Cultural Resources		
Alternatives MEN-5, MEN-7, MEN -9B, and MEN-12 could affect buried archaeological resources (currently unknown) during construction.	Implementing the following mitigation measures would reduce construction impacts to a less than significant level: • A historic context statement for the property will be completed, and an interpretive program consisting of a plaque or sign that describes Mendota Dam and its historical importance will be developed. The context statement will include photographs and available drawings, and a discussion of the property's associations with Henry Miller's ranching operations, agricultural development in the San Joaquin Valley, and the CVP. • If artifacts or unusual amounts of stone, bone, or shell were uncovered during construction activities, excavation would be	LS

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Impact	**Mitigation**	**Level of Significance After Mitigation**
	halted in the area of the find and a qualified archeologist would be brought onsite to evaluate the find. If bone were uncovered on nonfederal lands that could be human, the County Coroner would be contacted as required by state law. If the coroner determines that the bone is likely Native American in origin, activities would comply with state law and regulation. On federal lands, the Native American Graves Protection and Repatriation Act and its regulations would be followed.	
Alternatives MEN-5 and MEN-7 could cause an impact to a historic property.	See above.	LS
Air Quality		
Alternatives MEN-9B and MEN-12 would exceed the San Joaquin Valley Air Pollution Control District (SJVAPCD) significance thresholds during construction.	The following mitigation measures would reduce construction impacts to a level of less than significant: • The site would be presoaked sufficiently to limit visible dust emissions to 20 percent opacity. • Disturbed areas, including storage piles, that are not being actively used for construction, would be stabilized to reduce dust emissions using water or a chemical stabilizer/suppressant, or covered with a tarp or other suitable cover or vegetative ground cover. • Onsite and offsite unpaved roads would be stabilized to reduce dust emissions using water or chemical stabilizer/suppressant. • Land clearing, grubbing, scraping, excavation, land leveling, grading, cutting and filling, and demolition activities would be controlled to reduce fugitive dust emissions by applying water or presoaking. • When materials are transported offsite, material would be covered or wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container would be maintained. • Operations would limit or expeditiously remove accumulated mud or dirt from adjacent public streets at the end of each workday. • Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, those piles would be effectively stabilized to reduce fugitive dust emissions using water or chemical stabilizer/suppressant. • Traffic speeds on unpaved roads and at construction sites would be limited to 15 miles per hour. • Sandbags or other erosion control measures would be installed to prevent silt runoff to public roadways from sites with slopes greater than 1 percent.	LS
	• Contractor would use alternatively fueled or catalyst-equipped construction equipment when possible. • Vehicle and equipment idling time would be minimized to the extent practicable (e.g., 10-minute maximum).	

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Summary of Impacts and Mitigation Measures

Impact	Mitigation	Level of Significance After Mitigation
	• The hours of operation of heavy duty equipment and the amount of equipment in use would be limited to the extent possible. • Equivalent electrically powered equipment would replace fossil-fueled equipment (provided they are not powered by a portable generator). • Construction would be curtailed during periods of high ambient pollutant concentrations (this might include halting construction activity during peak-hour vehicular traffic on adjacent roadways). • Activities would be scheduled to reduce short-term impacts.	
Geology		
	No mitigation would be required.	
Recreational Resources		
	No mitigation would be required.	
Noise		
Alternative MEN-9B could potentially cause noise impacts to human receptors.	Implementation of the following mitigation measures would reduce impacts resulting from increased noise levels due to construction to a level of less than significant: • Construction activities would be limited to the hours of 7:00 a.m. to 7:00 p.m. • No construction would be performed within 1,000 feet of an occupied dwelling unit on Sunday, legal holidays. • All equipment would have sound-control devices no less effective than those provided on the original equipment. Equipment exhaust would be muffled.	LS
Socioeconomics		
Alternatives MEN-5, MEN-7, MEN-9B, or MEN-12 could cause the temporary loss of production to neighboring agricultural operations and inconvenience to farming operations.	Same mitigation measures as listed under Land Use.	LS
Visual Resources		
Construction of Alternatives MEN-5 and MEN-7 would result in the removal of vegetation from the project area, including riparian vegetation adjacent to the east side of the Mendota Pool.	As described under Biological Resources, the removal of native vegetation would be minimized to the extent possible. Additionally, revegetation measures would be developed and implemented to restore disturbed areas. Implementation of these measures would reduce the impact to a level of less than significant.	LS
Environmental Justice		
	No mitigation would be required.	